

What is claimed is:

1 ^{abc} 1. A process for preparing optical fiber, comprising the step of:
2 drawing fiber from a preform comprising a silica body, the body formed
3 by a process including the step of, prior to sintering the body, treating the
4 body at a temperature ranging from 300 to 900°C with a gaseous mixture
5 comprising one or more non-oxygenated sulfur halides.

1 2. The process of claim 1, wherein the body is selected from an
2 overladding tube and a substrate tube.

1 3. The process of claim 2, wherein the body is formed by a sol-gel
2 process.

1 4. The process of claim 1, wherein the temperature of treatment
2 ranges from 400 to 800°C.

1 5. The process of claim 4, wherein the temperature of treatment
2 ranges from 600 to 700°C.

1 6. The process of claim 1, wherein the treatment is performed for a
2 period of at least one hour.

1 7. The process of claim 6, wherein the treatment is performed for a
2 period of at least two hours.

1 8. The process of claim 1, wherein the one or more sulfur halides
2 comprise one or more sulfur chlorides.

1 9. The process of claim 8, wherein the one or more sulfur chlorides
2 comprise at least one of sulfur monochloride and sulfur dichloride.

1 ~~bc~~ 10. The process of claim 1, wherein the gaseous mixture further
2 comprises at least one of nitrogen, air, helium, neon, and argon.

1 11. The process of claim 1, wherein the one or more sulfur halides
2 are generated by reaction of sulfur present in the body with halides flowed
3 over the body.

1 ~~bc~~ 12. The process of claim 1, wherein the treatment performs at least
2 one of: reducing the size of at least a portion of refractory metal oxide
3 particles in the body and reducing the concentration of refractory metal oxide
4 particles in the body.

1 13. The process of claim 12, wherein the particles include at least
2 one of chromia and zirconia.

1 14. The process of claim 1, wherein the treatment reduces the
2 concentration of water and hydroxyl groups in the body.

1 15. The process of claim 1, wherein the gaseous mixture comprises
2 0.1 to 100 vol.% of the one or more sulfur halides.

1 16. The process of claim 15, wherein the gaseous mixture comprises
2 about 6 to about 7 vol.% of the one or more sulfur halides.

1 17. The process of claim 1, wherein the body is subjected to a
2 treatment with a gas comprising chlorine prior to the treatment with the one
3 or more sulfur halides.

1 18 18. The process of claim 17, wherein the gaseous mixture
2 comprising one or more sulfur halides comprises about 1 to about 2 vol.% of
3 the one or more sulfur halides.

1 19. The process of claim 17, wherein the chlorine treatment reduces
2 the concentration of water and hydroxyl groups in the body.

1 20. The process of claim 17, wherein the chlorine treatment
2 performs at least one: of reducing the size of at least a portion of chromia
3 particles in the body and reducing the concentration of chromia particles in
4 the body.

1 21. The process of claim 1, wherein the body is subjected to
2 treatment with a gas comprising oxygen subsequent to the treatment with
3 the one or more sulfur halides.

1 22. A process for preparing optical fiber, comprising the step of:
2 drawing fiber from a preform comprising a sol-gel silica tube, the tube
3 formed by a process including the step of, prior to sintering the tube, treating
4 the tube at a temperature ranging from 300 to 900°C with a gaseous mixture
5 comprising one or more non-oxygenated sulfur chlorides.

1 23. The process of claim 22, wherein the temperature of treatment
2 ranges from 400 to 800°C.

1 24. The process of claim 23, wherein the temperature of treatment
2 ranges from about 600 to about 700°C.

1 25. The process of claim 22, wherein the treatment is performed for
2 a period of at least two hours.

1 ~~26.~~ The process of claim 22, wherein the one or more sulfur
2 chlorides comprise at least one of sulfur monochloride and sulfur dichloride

1 27. The process of claim 22, wherein the one or more sulfur
2 chlorides are generated by reaction of sulfur present in the tube with chlorine
3 flowed over the tube.

1 ~~28.~~ The process of claim 22, wherein the treatment performs at least
2 one of: reducing the size of at least a portion of refractory metal oxide
3 particles in the tube and reducing the concentration of refractory metal oxide
4 particles in the tube.

1 29. The process of claim 22, wherein the gaseous mixture comprises
2 0.1 to 100 vol.% of the one or more sulfur chlorides.

1 30. The process of claim 29, wherein the gaseous mixture comprises
2 about 6 to about 7 vol.% of the one or more sulfur chlorides.

1 31. The process of claim 22, wherein the tube is subjected to a
2 treatment with a gas comprising chlorine prior to the treatment with the one
3 or more sulfur chlorides.

1 32. The process of claim 22, wherein the tube is subjected to
2 treatment with a gas comprising oxygen subsequent to the treatment with
3 the one or more sulfur chlorides.

1 33. The process of claim 22, where the tube is selected from an
2 overlapping tube and a substrate tub .

add
B' /